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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte PATRICK DOYLE and NELSON GE

Appeal 2008-002943
Application 09/752,369
Technology Center 2400

Decided:¹ June 8, 2009

Before JOHN A. JEFFERY, ST. JOHN COURTENAY III, and
STEPHEN C. SIU, *Administrative Patent Judges*.

JEFFERY, *Administrative Patent Judge*.

DECISION ON APPEAL

¹ The two-month time period for filing an appeal or commencing a civil action, as recited in 37 C.F.R. § 1.304, begins to run from the decided date shown on this page of the decision. The time period does not run from the Mail Date (paper delivery) or Notification Date (electronic delivery).

Appellants appeal under 35 U.S.C. § 134(a) from the Examiner's rejection of claims 1-26. We have jurisdiction under 35 U.S.C. § 6(b). We affirm.

STATEMENT OF THE CASE

Appellants invented a method for establishing an expanded InfiniBand² connectivity configuration by requesting a particular configuration and, if a response to that request is affirmative, attempting to establish the requested configuration.³ Claim 1 is illustrative:

1. A method comprising:

requesting an InfiniBand connectivity configuration;

receiving a response regarding whether the requested configuration can be provided; and

attempting to establish the requested connectivity configuration if the response to the request is affirmative.

The Examiner relies on the following as evidence of unpatentability:

Pickreign	US 6,732,249 B1	May 4, 2004 (filed June 9, 2000)
Osten	US 6,735,660 B1	May 11, 2004 (filed Dec. 21, 2000)

² The InfiniBand architecture is based on switched serial links to device groups and devices in which all devices are attached through a central, unified fabric of InfiniBand switches and links and connections are defined by "physical lanes." *See generally* Spec. 2:9–4:16.

³ *See generally* Spec. 6-8.

1. The Examiner rejected claims 1-6, 8-22, and 24-26 under 35 U.S.C.

§ 102(e) as anticipated by Osten (Ans. 4-10).

2. The Examiner rejected claims 7 and 23 under 35 U.S.C.

§ 103(a) as unpatentable over Osten and Pickreign (Ans. 10-11).

Rather than repeat the arguments of Appellants or the Examiner, we refer to the Briefs and the Answer⁴ for their respective details. In this decision, we have considered only those arguments actually made by Appellants. Arguments which Appellants could have made but did not make in the Briefs have not been considered and are deemed to be waived. *See* 37 C.F.R. § 41.37(c)(1)(vii).

THE ANTICIPATION REJECTION

Regarding representative claim 1,⁵ the Examiner finds that two different embodiments of Osten fully meet (1) requesting an InfiniBand connectivity configuration, and (2) receiving a response regarding whether the requested configuration can be provided.

⁴ Throughout this opinion, we refer to (1) the latest Appeal Brief filed June 11, 2007; (2) the Examiner's Answer mailed August 13, 2007; and (3) the Reply Brief filed August 11, 2006.

⁵ Appellants argue independent claims 1, 8, and 24 together and do not separately argue dependent claims 2-6, 9-11, 25, and 26. *See* App. Br. 9-16. Appellants, however, separately argue independent claims 12 and 16 and dependent claims 5 and 9. (App. Br. 12; Reply Br. 6-8.) Accordingly, we group claims 1-6, 8-11, and 24-26 and select claim 1 as representative of that group. We also group claims 5, 9, 12, and 16 (along with dependent claims 13-15 and 17-22 not separately argued) together as a second group and select claim 5 as representative of that group. *See* 37 C.F.R. § 41.37(c)(1)(vii).

First, the Examiner relies on Osten's ability to retrieve InfiniBand configuration information from an Input/Output adapter (IOA). According to the Examiner, Osten's presence signal corresponds to the recited "request," and the subsequent retrieval of configuration information corresponds to the recited "response." (Ans. 12-13.)

Alternatively, the Examiner finds Osten's database functionality meets these limitations since the database provides configuration information responsive to a make or model identifier that is provided to the database. According to the Examiner, the recited "request" corresponds to providing the make/model identifier to the database, and the database "responds" to this "request" by submitting the requested configuration information that the system uses to establish the associated configuration. (Ans. 13-14.)

Appellants argue that Osten's presence signal does not provide a request or response regarding a configuration as the Examiner contends, but rather is merely a signal to indicate that the IOA is in place (i.e., it notifies the processor that the IOA has been inserted into a slot and is ready). (App. Br. 9-10; Reply Br. 3-5.) According to Appellants, Osten merely examines an IOA to determine its capabilities, but does not request a connectivity configuration nor respond to that request. In short, Appellants contend, there is no back-and-forth communication between the devices to reasonably constitute the recited request and response. (App. Br. 10-11.)

Appellants further dispute the Examiner's alternative interpretation based on Osten's database functionality. According to Appellants, Osten's system merely obtains product information that can be used to make

capability determinations. But this functionality, Appellants contend, does not disclose the recited request and response. (App. Br. 11-12; Reply Br. 5-6.)

Regarding representative claim 5, the Examiner contends that nothing in the claim precludes Osten's database to constitute an "InfiniBand chassis management entity" (Ans. 15.) Appellants, however, argue that a database is not a chassis management entity as the term is understood in the art. (Reply Br. 7-8.)

The issues before us, then, are as follows:

ISSUES

(1) Under § 102, have Appellants shown that the Examiner erred in rejecting representative claim 1 by finding that (1) Osten's ability to retrieve InfiniBand configuration information from an Input/Output adapter (IOA) responsive to a presence signal, or, alternatively, (2) Osten's database functionality, reasonably constitutes requesting an InfiniBand connectivity configuration and receiving a response regarding whether the requested configuration can be provided?

(2) Under § 102, have Appellants shown that the Examiner erred in rejecting representative claim 5 by finding that Osten's database constitutes an "InfiniBand chassis management entity"?

FINDINGS OF FACT

The record supports the following findings of fact (FF) by a preponderance of the evidence:

Osten

1. Osten discloses a host 10 that interfaces with I/O subsystem 20 that uses an InfiniBand⁶-compatible architecture. The I/O subsystem includes a host channel adapter 22 and plural target channel adapters (TCAs) 26 that correspond to IOAs. (Osten, col. 4, l. 35 – col. 5, l. 16; Fig. 1.)

2. Figure 2 shows an IOA 26 (i.e., a TCA) including (1) InfiniBand link logic 50 that provides communications over an InfiniBand bus, and (2) tri-state logic block 54 that selectively tri-states the sideband signals to and from a high or low impedance state responsive to a presence signal. (Osten, col. 7, ll. 9-11, 20-34; Fig. 2.)

3. An InfiniBand-compatible slot in a backplane or other chassis interconnect may be dynamically configured for use with a sideband communications-capable IOA using a process similar to IOA initialization routine 70. Specifically, a System Enclosure Services (SES) processor 30 detects an asserted presence signal due to plugging in the IOA's primary connector into a mating slot in the backplane. (Osten, col. 7, ll. 58-62; col. 8, ll. 22-34; Figs. 2 and 3.)

4. Whenever a slot is empty or no IOA has been initialized in the slot, the SES processor controls the tri-state logic to set all sideband signal pairs to a high impedance state. When a sideband-compatible IOA is inserted in a slot, a presence detect signal will immediately (1) tri-state the sideband

⁶ “The InfiniBand standard defines a high-speed serial, channel-based, message-passing, scalable switched fabric that is likely to replace the PCI standard in high performance applications. . . .With the InfiniBand standard, all systems and devices . . . attach to the fabric through channel adapter logic.” (Osten, col. 1, ll. 61-67.) *See also generally* Osten, col. 5, l. 66 – col. 6, l. 31 (describing the InfiniBand standard).

signal paths on the IOA via tri-state logic block 54, and (2) notify the SES processor that an IOA has been inserted in the slot as is ready to be initialized. (Osten, col. 8, ll. 38-46.)

5. Upon detecting the assertion of a presence signal, the SES reads the IOA's vital product data (VPD) information to determine the IOA's capabilities (Steps 70 and 72). The SES processor then checks the relative capabilities and compatibility between the IOA and host apparatus (Step 74) and, if successful, sets up initial slot and IOA configurations to prepare for sideband communications (Step 78). Following these steps, power is ultimately applied to the IOA, and the IOA will initiate itself. (Osten, col. 8, l. 47 – col. 9, l. 15; Fig. 3.)

6. VPD block 60 defines VPD information including sideband configuration information that defines the sideband capabilities of the IOA (e.g., width of the InfiniBand bus, assignment of sideband signals to particular signal paths, etc.). (Osten, col. 7, ll. 43-48; Fig. 2.)

7. Alternatively, a make or model identifier for the IOA could be provided as sideband configuration information so that a host system could access a database to obtain relevant information for the particular type of IOA. (Osten, col. 7, ll. 49-53.)

Appellants' Disclosure

8. According to Appellant's Specification, "an InfiniBand module is a unit that, at a minimum, consists of an InfiniBand board, a carrier module, and a protective cover." (Spec. 7:20-21.)

9. The Specification indicates that when an InfiniBand module requests an expanded connectivity configuration, the request is made to an InfiniBand chassis management entity (which is part of an InfiniBand chassis) via an InfiniBand management link. (Spec. 8:2-15.)

10. “The invention is not limited to a physical InfiniBand management link, but may also include communication using a virtual InfiniBand management link or other connection.” (Spec. 8:15-17.)

PRINCIPLES OF LAW

Anticipation is established only when a single prior art reference discloses, expressly or under the principles of inherency, each and every element of a claimed invention as well as disclosing structure which is capable of performing the recited functional limitations. *RCA Corp. v. Appl. Dig. Data Sys., Inc.*, 730 F.2d 1440, 1444 (Fed. Cir. 1984); *W.L. Gore & Assoc., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1554 (Fed. Cir. 1983).

ANALYSIS

Claims 1-6, 8-11, and 24-26

Based on the record before us, we find no error in the Examiner’s anticipation rejection of representative claim 1 which calls for, in pertinent part, (1) requesting an InfiniBand connectivity configuration, and (2) receiving a response regarding whether the requested configuration can be provided.

First, we agree with the Examiner (Ans. 12-13) that nothing in the claim precludes Osten’s presence signal as corresponding to the recited “request,” and the subsequent retrieval of configuration information

corresponds to the recited “response.” Osten’s presence signal is communicated to the SES processor when an IOA is inserted into a slot (FF 3), and triggers a procedure that assesses the capabilities of the IOA and establishes the requisite connectivity configuration responsive to this assessment. (FF 4 and 5.) That is, *but for* a particular IOA’s presence signal, the SES would not perform the assessment and resulting connectivity configuration for that IOA. *See id.* Therefore, the presence signal, by its very nature, effectively constitutes a “request” since it initiates the subsequent configuration process that is tailored to the particular IOA associated with the presence signal.

We also agree with the Examiner (Ans. 12-13) that nothing in the claim precludes the received “response” as corresponding to the retrieval of information associated with the IOA’s capabilities. *See* FF 5 and 6. Because this information is retrieved responsive to detecting an IOA’s presence signal (*see id.*), it fully meets a received “response.” Furthermore, the very act of retrieving the IOA capability information in Osten would involve querying the entity where the information is stored, and receiving a response to that query. *See id.* This retrieval would therefore constitute a “response” for this additional reason.

As such, we also find no error in the Examiner’s alternative interpretation based on Osten’s database functionality as corresponding to the recited request and response limitations. Notably, Osten indicates that this database functionality which provides a make or model identifier for an IOA is described as an alternative to the specific sideband configuration information provided by the VPD block 60. *See* FF 6 and 7. That is, because the identifiers themselves are not as specific as the sideband

configuration information provided by the VPD block 60, the identifiers merely provide a basis to look up additional information (e.g., sideband configuration information) pertaining to that identifier. *See id.*

In that sense, we see no error in the Examiner's position (Ans. 13-14) that providing an identifier to a database effectively constitutes a "request" for additional information from the database. And as the Examiner indicates (Ans. 14), the database's response to this "request" would fully meet the recited "response" since the system would then use this retrieved configuration information to establish the associated configuration. *See* FF 5 and 7.

For the foregoing reasons, Appellants have not persuaded us of error in the Examiner's rejection of representative claim 1. Therefore, we will sustain the Examiner's rejection of that claim, and claims 2-6, 8-11, and 24-26 which fall with claim 1.

Claims 5, 9, and 12-22

We will also sustain the Examiner's rejection of representative claim 5 which calls for the request to be made by an InfiniBand module to an InfiniBand chassis management entity. Despite Appellants' contentions to the contrary (Reply Br. 7-8), we find nothing on the record before us that precludes the Examiner's interpreting "InfiniBand chassis management entity" as corresponding to Osten's database (Ans. 15) giving the term its broadest reasonable interpretation.

According to the Specification, when an InfiniBand module requests an expanded connectivity configuration, the request is made to an InfiniBand chassis management entity via an InfiniBand management link. (FF 9.)

Although the Specification indicates that InfiniBand chassis management entity is part of an InfiniBand chassis (*Id.*), we see no reason why it cannot constitute a database, at least in part, particularly since communication to this chassis management entity need not be via a physical InfiniBand management link, but can be via a virtual link. *See* FF 10.

To the extent that Appellants' position is based on notion that the InfiniBand Architecture Specification restricts interpreting the term "chassis management entity" to a specific definition (*see* Reply Br. 7-8), Appellants have provided no such definition before us, nor any other evidence establishing a narrower construction of the term. Absent evidence to the contrary, we find nothing on this record precluding the Examiner's construction of "chassis management entity."

For the foregoing reasons, Appellants have not persuaded us of error in the Examiner's rejection of representative claim 5. Therefore, we will sustain the Examiner's rejection of that claim, and claims 9 and 12-22 which fall with claim 5.

THE OBVIOUSNESS REJECTION

Regarding representative claim 7, the Examiner further relies on Pickreign for teaching writing connectivity configuration requests and responses to registers in concluding that the claim would have been obvious. (Ans. 10, 11, 15, 16.) Appellants argue that Pickreign does not cure the previously-noted deficiencies of Osten. Appellants add that since Pickreign pertains to requests for memory and associated responses, Pickreign does not teach or suggest writing connectivity configuration requests and responses to registers as claimed. (App. Br. 13; Reply Br. 9.)

The issue before us, then, is as follows:

ISSUE

Have Appellants shown that the Examiner erred in finding that Osten and Pickreign collectively teach or suggest a writing connectivity configuration requests and responses to different registers in rejecting claim 7 under § 103?

The issue turns on whether the Examiner's reason to combine the teachings of these references is supported by articulated reasoning with some rational underpinning to justify the Examiner's obviousness conclusion.

FINDINGS OF FACT

The record supports the following additional findings of fact (FF) by a preponderance of the evidence:

Pickreign

11. Pickreign discloses a system for mapping a host computer address space into a network interface adapter (NIA) address space. (Pickreign, Abstract; col. 2, ll. 12-35.)

12. The NIA 14 includes a PCI interface 40 that couples the network interface processor 24 to a PCI bus 13 via multiple registers including PCI configuration registers 36. (Pickreign, col. 2, ll. 36-48; Fig. 1.)

13. The PCI configuration registers 36 comprise multiple registers for passing (1) configuration requests from the NIA to the host computer 12; (2) configuration responses from the host computer to the NIA; and (3) configuration data between both the NIA and the host computer. (Pickreign, col. 2, ll. 48-53; Fig. 1.)

PRINCIPLES OF LAW

In rejecting claims under 35 U.S.C. § 103, it is incumbent upon the Examiner to establish a factual basis to support the legal conclusion of obviousness. *See In re Fine*, 837 F.2d 1071, 1073 (Fed. Cir. 1988). In so doing, the Examiner must make the factual determinations set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966) (noting that 35 U.S.C. § 103 leads to three basic factual inquiries: (1) the scope and content of the prior art; (2) the differences between the prior art and the claims at issue; and (3) the level of ordinary skill in the art). Furthermore, the Examiner's obviousness rejection must be based on

“some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness” [H]owever, the analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.

KSR Int'l Co. v. Teleflex, Inc., 550 U.S. 398, 418 (2007) (quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)).

If the Examiner's burden is met, the burden then shifts to the Appellants to overcome the *prima facie* case with argument and/or evidence. Obviousness is then determined on the basis of the evidence as a whole and the relative persuasiveness of the arguments. *See In re Oetiker*, 977 F.2d 1443, 1445 (Fed. Cir. 1992).

ANALYSIS

Based on the record before us, we find no error in the Examiner's obviousness rejection of representative claim 7 which calls for, in pertinent part, writing connectivity configuration requests and responses to different registers.

Notably, Pickreign teaches a system that utilizes multiple registers for passing (1) configuration *requests* from the NIA to a host computer, and (2) configuration *responses* from the host computer to the NIA. (FF 13; emphasis added.) Although Pickreign may not pertain specifically to InfiniBand technology, it does utilize these registers in connection with exchanging PCI configuration information (FF 12-13) as the Examiner indicates (Ans. 15-16).

As such, we see no reason why registers could not likewise be utilized in connection with requests and responses for InfiniBand configurations as the Examiner indicates. Such an enhancement, in our view, is tantamount to the predictable use of prior art elements according to their established functions—an obvious improvement. *See KSR*, 550 U.S. at 417; *see also id.* (“[I]f a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual

application is beyond his or her skill.”). We therefore find the Examiner’s reason to combine the teachings of these references is supported by articulated reasoning with some rational underpinning to justify the Examiner’s obviousness conclusion.

For the foregoing reasons, Appellants have not persuaded us of error in the Examiner’s rejection of representative claim 7. Therefore, we will sustain the Examiner’s rejection of that claim, and claim 23 which falls with claim 7.

CONCLUSIONS

Appellants have not shown that the Examiner erred in rejecting claims 1-6, 8-22, and 24-26 under § 102. Nor have Appellants shown that the Examiner erred in rejecting claims 7 and 23 under § 103.

ORDER

The Examiner’s decision rejecting claims 1-26 is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED

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